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09/434,703	11/05/1999	ERIC O. BODNAR	LS/0001.01	4272

7590　　12/29/2005	EXAMINER
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ART UNIT	PAPER NUMBER
2612	

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Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	09/434,703	BODNAR ET AL.
	Examiner	Art Unit	
	LUONG T. NGUYEN	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>03 October 2005</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-7,10-21,23-27,30-41,43-47 and 50-66,68* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-7,10-21,23-27,30-41,43-47,50-66 and 68* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Arguments

1.   Applicant's arguments filed on 10/03/2005 have been fully considered but they are not persuasive.

In re page 12, Applicants argue that "Aragaki's file header merely includes identification data and two data values indicating image size and amount of data, and does not include any individual bit plane data," thus Aragaki does not teach or suggest header information identifying the individual bit planes.

In response, regarding claim 1, it is noted that claim 1 does not require "header information include any individual bit plane data." Instead, Applicants amended claim 1 with the limitation "packaging said compressed luminosity information with header information identifying the individual bit planes." The Examiner considers that claim 1 as amended still does not distinguish from Acharya et al. patent in view of Aragaki patent further in view of Tran patent. Acharya et al. discloses captured images are splitted into plurality of channels including color plane difference channel, then compressing separately each of color plane channels (individual bit plane) by image compression circuit 832, see Abstract, figures 2, 7-8, column 12, lines 45-50. Acharya et al. does not disclose packaging the compressed luminosity information with header information identify the individual bit plane. However, Aragaki teaches this feature. Aragaki teaches a method of storing and transmitting compressed image data and file header, in which the file header includes information for identify the image filed (column 1, lines 18-19), further, the file header identifies the reduced and compressed image data, each reduced and

compressed image data is represented in serial order of bit planes (figures 4A-4B, 10, 17A-17B, column 8, lines 52-58, column 6, lines 39-58, column 13, line 60 – column 14, line 46). It is noted that the file header includes size of reduce image LRX, LRY, which includes compressed image data in serial order of bit planes (figure 4B, column 8, lines 1-8). Therefore, Aragaki discloses "header information identify the individual bit planes."

In re page 14, Applicants argue that Acharya and Tran, either individually or in combination, do not teach or suggest applying a transformation compression to all individual bit planes that comprise only the luminosity information, for generating compressed luminosity information at the imager without having performed color processing. Rather, Acharya disclose compressing all the color components (Y, M, C and K) of the reduced image data (Acharya, col. 6, line 39 to col. 7, line 14).

In response, regarding claim 41, Applicants amended claim 41 with the limitation "applying a transformation compression to all individual bit planes that comprise only the luminosity information." Note that since Acharya et al. (col. 6, line 39 to col. 7, line 14) do not disclose compressing all the color components (Y, M, C and K) of the reduced image data, the Applicants' argument "Acharya disclose compressing all the color components (Y, M, C and K) of the reduced image data (Acharya, col. 6, line 39 to col. 7, line 14)" is not relevant.

In addition, the Applicants disclose in the specification, page 9 that "luminosity information" is referred to the separated color plane information, which corresponds to individual color planes R, G, B). Therefore, the Examiner considers that claim 41 as amended still does not distinguish from Acharya et al. Acharya et al. teaches compression of individual color planes R-G1, G1, G2, B-G2 which corresponds to luminosity information (compression to

all individual bit planes that comprise only the luminosity information) as shown in figure 7,

column 11, line 60 – column 12, line 10).

Claim Rejections - 35 USC § 103

2.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

3.   Claims 1, 3-7, 10-21, 23-27, 30-40 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Acharya et al. (US 6,154,493) in view of Aragaki (US 4,992,887) further in

view of Tran (US 6,202,060).

Regarding claims 1, 10, Acharya ('493) discloses a method for distributed digital image

processing, comprising recording luminosity information at a first device (captured images by

camera 830 are recorded in memory 834, figures 7-8, column 12, lines 25-35); without

performing color interpolation at the first device, generating compressed luminosity information

at the first device by applying a wavelet transform compression to individual bit planes that

comprise the luminosity information, followed by applying quantization and compression to the

luminosity information (captured images are compressed by an image compression circuit 832,

the compressing separately each of color plane channels, see Abstract, figures 2, 7-8, column 12,

lines 45-50); packaging said compressed luminosity information (pack the compressed data,

column 12, lines 7-11); transmitting said compressed luminosity information to a second device

(the compressed images are transferred to computer system 810, figures 7-8, column 13, lines

15-25); restoring said luminosity information from said compressed luminosity information at

the second device (figure 8, column 13, lines 40-57); converting said luminosity information at

the second device into a color image, including performing color interpolation at the second

device (the application used to perform the integrated color interpolation after download from

camera 830, figure 8, column 13, lines 1-5, lines 40-52).

Acharya ('493) fails to specifically disclose packaging said compressed luminosity

information with header information identifying the individual bit planes. However, Aragaki

discloses a method of storing and transmitting image data as an image file suitable for an image

search, in which the image file includes a file header (Figures 4A-4B, 10, 17A-18B, column 8,

lines 52-58, column 6, lines 39-58, column 13, line 60 – column 14, lines 46). It is noted that the

file header includes size of reduce image LRX, LRY, which includes compressed image data in

serial order of bit planes (figure 4B, column 8, lines 1-8). Therefore, it would have been obvious

to one of ordinary skill in the art at the time the invention was made to modify the device in

Acharya ('493) by the teaching of Aragaki in order to store a file header in an image data. This

saves time in searching and retrieving image data.

Acharya ('493) and Aragaki fail to specifically disclose transmitting compressed

luminosity information to a second device in a wireless manner using a packet-based

communication protocol. However, Tran teaches images captured by the camera 27 can be

transmitted to a second device through PCMICIA bus and wireless transceiver 31; the wireless

transceiver 31 is a two-way communication protocol (figure 1, column 7, line 28 – column 8,

line 30). Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to modify the device in Acharya ('493) and Aragaki by the teaching of Tran

in order to transmit the image to a remote device without using cable.

Regarding claims 3, 23, Acharya ('493) discloses wherein said sensor information

comprises light-level information for representing an image that has been digitally recorded at

the first device (intensity values, column 11, lines 15-30).

Regarding claim 4, Acharya ('493) discloses a generic binary compression module

(compression quantizer 728, figure 7, column 12, lines 1-11).

Regarding claims 5, 25, Acharya ('493) discloses run-length encoding (column 12, lines

5-11).

Regarding claims 6, 26, Acharya ('493) discloses Huffman coding (column 12, lines 5-

11).

Regarding claims 7, 27, Acharya ('493) discloses reversing said compression that

occurred at the first device (figure 3).

Regarding claims 11, 31, Acharya ('493) discloses apply a YUV transformation at the

second device for converting said sensor into a color image in YUV color space (the application

used to perform color space conversion after download from camera 830, column 2, lines 34-54,

column 13, lines 1-5).

Regarding claims 12, 32, Acharya ('493) discloses converting the color image into a

standard file format at the second device (store XYZ color space image data in memory 811,

figure 8, column 13, lines 15-40).

Regarding claims 13, 33, Acharya ('493) discloses JPEG format (column 1, lines 65-67).

Regarding claim 14, 34, Acharya ('493) fails to specifically disclose applying JPEG

compression to the color image at the second device. Official Notice is taken that applying

JPEG compression to the color image at the second device such as a computer is well known the

art. This reduces the time to transmit image data to another device in a network.

Regarding claims 15-16, 35-36, Tran discloses transmitting said compressed luminosity

information using a packet-based communication protocol, and selectively connecting the digital

camera to a cellular phone for establishing a wireless communication session with the computer

(figure 1, column 7, line 28 – column 8, line 30).

Regarding claims 17, 37, Tran discloses wherein said second device comprises a

computer with connectivity to the Internet (figure 4, column 19, lines 30-33).

As for claims 18-20, 38-40, Acharya ('493), Aragaki and Tran fail to specifically disclose

transmitting said compressed sensor information by first transmitting a lower-quality

representation of the image recorded at the first device. However, Acharya ('493) discloses

compressed signals could be downloaded to the computer (figure 8). It would have been obvious

that lower-quality image is converted into higher-quality image in order to let the user could see

a higher quality on the display.

Regarding claim 21, Acharya ('493) discloses a method for deferring digital image

processing, the method comprising recording sensor information at a first device (captured

images by camera 830 are recorded in memory 834, figures 7-8, column 12, lines 25-35);

compressing said sensor information prior to color processing by applying a transformation

compression to individual bit planes that comprise the sensor information, for generating

compressed sensor information at the first device (captured images are compressed by an image

compression circuit 832, the compressing separately each of color plane channels, see Abstract,

figures 2, 7-8, column 12, lines 45-50); packaging said compressed luminosity information (pack

the compressed data, column 12, lines 7-11); without performing color processing at the first

device, transmitting said compressed sensor information to a second device (the compressed

images are transferred to computer system 810, figures 7-8, column 13, lines 40-47);

decompressing said compressed sensor information at the second device, whereupon said sensor

information may thereafter be processed into color image (figure 8, column 13, lines 40-52).

Acharya ('493) fails to specifically disclose packaging said compressed luminosity

information with header information identifying the individual bit planes. However, Aragaki

discloses a method of storing and transmitting image data as an image file suitable for an image search, in which the image file includes a file header (Figures 4A-4B, 10, 17A-18B, column 8, lines 52-58, column 13, line 60 – column 14, lines 46). It is noted that the file header includes size of reduce image LRX, LRY, which includes compressed image data in serial order of bit planes (figure 4B, column 8, lines 1-8). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Acharya ('493) by the teaching of Aragaki in order to store a file header in an image data. This saves time in searching and retrieving image data.

Acharya ('493) and Aragaki fail to specifically disclose transmitting compressed luminosity information to a second device in a wireless manner using a packet-based communication protocol. However, Tran teaches images captured by the camera 27 can be transmitted to a second device through PCMICIA bus and wireless transceiver 31; the wireless transceiver 31 is a two-way communication protocol (figure 1, column 7, line 28 – column 8, line 30). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Acharya ('493) and Aragaki by the teaching of Tran in order to transmit the image to a remote device without using cable.

Regarding claims 24, Acharya ('493) discloses applying wavelet transform to individual bit planes that comprise the sensor image (see abstract, column 4, lines 49-61); and applying compression to the transformed sensor image, to create said compressed sensor image at the first device (compression quantizer 728, figure 7).

Regarding claims 30, Acharya ('493) discloses converting sensor information into color

by interpolating color information (color interpolation data, column 13, lines 40-47).

4.   Claims 41, 43-47, 50-66, 68 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Acharya et al. (US 6,154,493) in view of Tran (US 6,202,060).

Regarding claim 41, Acharya ('493) discloses an imaging system providing deferred

image processing, the system comprising an imager (camera 830, figure 8, column 11, lines 15-

65, column 12, lines 24-45); compressor module for compressing said luminosity information by

applying a transformation compression to individual bit planes that comprise only the luminosity

information, for generating compressed luminosity information at the imager without performing

color processing at the first device (captured images are compressed by an image compression

circuit 832, the compressing separately each of color plane channels, see Abstract, figures 2, 7-8,

column 12, lines 45-50; column 13, lines 40-47); a communication link (bus 760, figure 7); a

decompression module for decompressing said compressed luminosity information at the target

device, whereupon said luminosity information may thereafter be processed into color image

(figure 8, column 13, lines 40-52).

Acharya ('493) fails to specifically disclose a wireless communication link for

transmitting compressed luminosity information to a target device in a wireless manner using a

packet-based communication protocol. However, Tran teaches images captured by the camera

27 can be transmitted to a second device through PCMICIA bus and wireless transceiver 31; the

wireless transceiver 31 is a two-way communication protocol (figure 1, column 7, line 28 –

column 8, line 30). Therefore, it would have been obvious to one of ordinary skill in the art at

the time the invention was made to modify the device in Acharya ('493) and Aragaki by the

teaching of Tran in order to transmit the image to a remote device without using cable.

Regarding claim 43, Acharya ('493) discloses wherein said sensor information comprises

light-level information for representing an image that has been digitally recorded at the first

device (intensity values, column 11, lines 15-30).

Regarding claim 44, Acharya ('493) discloses a generic binary compression module

(compression quantizer 728, figure 7, column 12, lines 1-11).

Regarding claim 45, Acharya ('493) discloses run-length encoding (column 12, lines 5-

11).

Regarding claim 46, Acharya ('493) discloses Huffman coding (column 12, lines 5-11).

Regarding claim 47, Acharya ('493) discloses reversing generic binary compression that

has been applied at the imager (figure 3).

Regarding claim 50, Acharya ('493) discloses converting sensor information into color

by interpolating color information (color interpolation data, column 13, lines 40-47).

Regarding claim 51, Acharya ('493) discloses apply a YUV transformation at the second

device for converting said sensor into a color image in YUV color space (the application used to

perform color space conversion after download from camera 830, column 2, lines 34-54, column

13, lines 1-5).

Regarding claim 52, Acharya ('493) discloses converting the color image into a standard

file format at the target device (store XYZ color space image data in memory 811, figure 8,

column 13, lines 15-40).

Regarding claim 53, Acharya ('493) discloses JPEG format (column 1, lines 65-67).

Regarding claim 54, Acharya ('493) and Tran fail to specifically disclose applying JPEG

compression to the color image at the second device. Official Notice is taken that applying

JPEG compression to the color image at the second device such as a computer is well known the

art. This reduces the time to transmit image data to another device in a network.

Regarding claim 55, 56, Acharya ('493) discloses a digital camera (digital camera 830,

figure 8); computer (computer 810, figure 8). Tran discloses cellular phone device (inherently

included in telephone network 102, figure 4, column 17, lines 30-40).

Regarding claim 57, Tran discloses wherein said second device comprises a computer

with connectivity to the Internet (figure 5, mobile computers 10, 11, 12, 13 are connected to

Internet 150, column 20, lines 25-30).

As for claims 58-60, Acharya ('493) and Tran fail to specifically disclose transmitting said compressed sensor information by first transmitting a lower-quality representation of the image recorded at the first device. However, Acharya ('493) discloses compressed signals could be downloaded to the computer (figure 8). It would have been obvious that lower-quality image is converted into higher-quality image in order to let the user could see a higher quality on the display.

Regarding claim 61, Acharya ('493) discloses a digital camera (digital camera 830, figure 8, column 12, lines 24-45).

Regarding claim 62, Acharya ('493) discloses a desktop computer (computer 810, column 12, lines 24-30).

Regarding claim 63, Acharya ('493) discloses a server computer (computer 810, column 12, lines 24-30).

Regarding claim 64, Acharya ('493) fails to specifically disclose a CMOS image sensor. Official notice is taken that such CMOS image sensor is used in a camera is well known in the art. The CMOS image sensor can be integrated with control and signal processing circuit to form a camera on a chip. This reduces the size of the camera.

Regarding claim 65, Acharya ('493) fails to specifically disclose a CCD image sensor. Official notice is taken that such CCD image sensor is used to capture image in a camera is well known in the art.

Regarding claim 66, Acharya ('493) discloses gray-scale luminosity information (m bit intensity, column 11, lines 45-50).

Regarding claim 68, Acharya ('493) discloses applying wavelet transform to individual bit planes that comprise the sensor image (see abstract, column 4, lines 49-61); and applying compression to the transformed sensor image, to create said compressed sensor image at the first device (compression quantizer 728, figure 7).

Conclusion

5.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

6.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to LUONG T. NGUYEN whose telephone number is (571) 272-

7315. The examiner can normally be reached on 7:30AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, NGOCYEN VU can be reached on (571) 272-7320. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN LN
12/23/2005

TUAN HO
PRIMARY EXAMINER